

note : change comment 6.0

Dart Aerospace Ltd.

Date: Friday, 11/17/2006 10:06:01 AM
User: Kim Johnston

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: 02.750 SUPPORT
Job Number	: 29524		
Estimate Number	: 10829		
P.O. Number	: <i>N/A</i>	Part Number	: D28931
This Issue	: 11/17/2006 S.O. No. : <i>N/A</i>	Drawing Number	: D2893 REV A1
Prsht Rev.	: NC	Project Number	: N/A
First Issue	: <i>N/A</i> Type : MACHINED PARTS	Drawing Revision	: A1
Previous Run	: 29073	Material	: <i>N/A</i>
Written By	: <i>[Signature]</i>	Due Date	: 12/5/2006
Checked & Approved By	: <i>[Signature]</i>	Qty:	20 Um: Each
Comment	: Est: C 02.11.26 Reformat; Added P/O KJ est D 06.04.19 removed alodine EC		

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 PG

PURCHASING



Comment: PURCHASING

Issue P/O: *2511*

Description: D6104-005

Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104

Material release note required.

*C20611/17**(20)*

2.0

D6104005

17-4 SS Roundbar 4.00"OD



Comment: Qty.: 1.0000 Each(s)/Unit Total : 20.0000 Each(s)

Support

*B29524**MS 06/11/30**20*

3.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Recieve & Inspect for Transit Damage

Ensure Material Release Note is attached

*MS 06/11/30**(20)*

4.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

Turn blank for Haas as per Folio FA081

*36 / MS 06/11/30**20*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: ☒ ☐ Date: 06/12/14

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 11/17/2006 10:06:01 AM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 02.750 SUPPORT

Job Number: 29524

Part Number: D28931

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

36/M8 06/11/30 20

6.0

HAAS1

HAAS CNC VERTICAL MACHINING #1



Comment: BAND SAW ← ???
Machine as per Folio FA081
Tumble & Deburr

60/5.6 06/12/04 40

7.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT ALL DIM TO DIM SHEET

60/5.6 06/12/04 40

8.0

QC8

SECOND CHECK



Comment: SECOND CHECK

and 06/12/11 40

9.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING
Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

M. R. M. 06/12/12 40

10.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT

CB 06/12/13 40

11.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1
Identify and Stock
Location: ST359

CB 06/12/13 40

12.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

204/12/14 40

Job Completion



206/12/14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order: 29524
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.707	2.712		2.711	2.712	2.712	2.712	M8	06/11/30
B	4.946	4.966		4.946	4.947	4.946	4.956		
C	3.064	3.084		3.078	3.078	3.076	3.076		
D	0.718	0.738		.726	.728	.728	.728		
E	0.090	0.110		.103	.100	.100	.100		
F	2.934	2.954		2.944	2.944	2.944	2.944		
G	2.166	2.186		2.177	2.175	2.176	2.176		
H	3.890	3.910		3.900	3.900	3.898	3.898		
I	0.914	0.934		.928	.924	.924	.924		
J	0.022	0.042		.032	.032	.032	.032		
K	0.109	0.129		.118	.119	.118	.117		
L									
HAAS Section									
AA	2.985	3.005		2.995	2.994	2.994	2.994		
AB	0.440	0.460		0.440	0.454	0.451	0.440		
AC	0.125	0.160		0.140	0.144	0.139	0.144		
AD	0.040	0.060		0.053	0.044	0.051	0.042		
AE	0.188	0.193	DT8706	0.190	0.189	0.189	0.189		
AF	0.125	0.160		0.146	0.130	0.140	0.136		
AG	0.140	0.160		0.151	0.154	0.152	0.152		
AH	1.360	1.400		1.370	1.380	1.377	1.380		
AI	0.040	0.060		0.056	0.045	0.046	0.046		
AJ	1.190	1.230		1.216	1.219	1.219	1.220		
AK	0.010	0.020		0.015	0.015	0.015	0.015		
AL	0.053	0.073		0.063	0.063	0.063	0.063		
AM	0.240	0.260		0.250	0.250	0.250	0.250		
AN	2.518	2.538			2.528	2.528	2.528		
AO	84.39	90.39	DT8699	87.39	87.39	87.39	87.39		
AP	0.257	0.262	DT8685	0.258	0.260	0.260	0.260		
AQ	0.053	0.073		0.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

Measured by: M8 / S.G.	Audited by: ml
Date: 06/11/30 / 06/12/04	Date: 06/12/11

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	#

DART AEROSPACE LTD	Work Order: 29524
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions				By	Date
				Ø5	Ø6	Ø7	Ø8		
Lathe Section									
A	2.707	2.712		2.712	2.712	2.712	2.712	M8	06/11/30
B	4.946	4.966		4.956	4.956	4.956	4.956		
C	3.064	3.084		3.076	3.076	3.076	3.076		
D	0.718	0.738		.726	.726	.726	.726		
E	0.090	0.110		.103	.103	.102	.102		
F	2.934	2.954		2.944	2.944	2.944	2.944		
G	2.166	2.186		2.177	2.175	2.176	2.176		
H	3.890	3.910		3.898	3.898	3.898	3.898		
I	0.914	0.934		.924	.924	.924	.924		
J	0.022	0.042		.032	.032	.032	.032		
K	0.109	0.129		.117	.117	.117	.117		
L									
HAAS Section									
AA	2.985	3.005		2.992	2.997	2.995	2.996		
AB	0.440	0.460		0.445	0.445	0.442	0.444		
AC	0.125	0.160		0.137	0.140	0.137	0.139		
AD	0.040	0.060		0.048	0.052	0.047	0.051		
AE	0.188	0.193	DT8706	0.189	0.189	0.189	0.189		
AF	0.125	0.160		0.140	0.141	0.142	0.142		
AG	0.140	0.160		0.149	0.151	0.152	0.151		
AH	1.360	1.400		1.383	1.382	1.381	1.381		
AI	0.040	0.060		0.045	0.053	0.052	0.053		
AJ	1.190	1.230		1.224	1.225	1.228	1.221		
AK	0.010	0.020		0.015	0.015	0.015	0.015		
AL	0.053	0.073		0.063	0.063	0.063	0.063		
AM	0.240	0.260		0.250	0.250	0.250	0.250		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39	DT8699						
AP	0.257	0.262	DT8683	0.260	0.260	0.260	0.260		
AQ	0.053	0.073		0.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

Measured by:	M81 E / 5.6
Date:	06/11/30

Audited by:	Am
Date:	06/12/11

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	

DART AEROSPACE LTD	Work Order: 29524
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions				By	Date
				#9	#10	#11	#12		
Lathe Section									
A	2.707	2.712		2.712	2.712	2.712	2.712	M8	06/11/30
B	4.946	4.966		2.956	2.956	2.956	2.956		
C	3.064	3.084		3.076	3.076	3.076	3.076		
D	0.718	0.738		.728	.726	.728	.728		
E	0.090	0.110		.102	.102	.102	.102		
F	2.934	2.954		2.944	2.944	2.944	2.944		
G	2.166	2.186		2.178	2.178	2.178	2.178		
H	3.890	3.910		3.898	3.898	3.898	3.898		
I	0.914	0.934		.924	.924	.924	.924		
J	0.022	0.042		.032	.032	.032	.032		
K	0.109	0.129		.117	.117	.117	.117		
L									
HAAS Section									
AA	2.985	3.005		2.995	2.995	2.996	2.995		
AB	0.440	0.460		0.445	0.445	0.446	0.447		
AC	0.125	0.160		0.146	0.140	0.146	0.146		
AD	0.040	0.060		0.052	0.051	0.052	0.051		
AE	0.188	0.193	DT8706	0.190	0.190	0.190	0.190		
AF	0.125	0.160		0.141	0.141	0.142	0.142		
AG	0.140	0.160		0.150	0.150	0.150	0.156		
AH	1.360	1.400		1.383	1.382	1.382	1.382		
AI	0.040	0.060		0.045	0.046	0.049	0.048		
AJ	1.190	1.230		1.224	1.224	1.224	1.224		
AK	0.010	0.020		0.015	0.015	0.015	0.015		
AL	0.053	0.073		0.063	0.063	0.063	0.063		
AM	0.240	0.260		0.250	0.250	0.250	0.250		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39	DT8699						
AP	0.257	0.262	DT8683	0.258	0.258	0.258	0.258		
AQ	0.053	0.073		0.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

Measured by:	M8 / J.6
Date:	06/11/30 / 06/12/07

Audited by:	Amk
Date:	06/12/11

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	J

DART AEROSPACE LTD	Work Order: 29524
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	Ø13	Ø14	Ø15	Ø16	By	Date
Lathe Section									
A	2.707	2.712		2.712	2.712	2.712	2.712	MS	06/11/30
B	4.946	4.966		4.956	4.956	4.956	4.956		
C	3.064	3.084		3.074	3.075	3.075	3.075		
D	0.718	0.738		.728	.728	.728	.728		
E	0.090	0.110		.100	.100	.100	.100		
F	2.934	2.954		2.944	2.945	2.945	2.945		
G	2.166	2.186		2.176	2.176	2.176	2.176		
H	3.890	3.910		3.898	3.899	3.899	3.899		
I	0.914	0.934		.924	.925	.925	.925		
J	0.022	0.042		.032	.032	.032	.032		
K	0.109	0.129		.117	.117	.117	.117		
L									
HAAS Section									
AA	2.985	3.005		2.995	2.995	2.996	2.997		
AB	0.440	0.460		0.445	0.444	0.450	0.450		
AC	0.125	0.160		0.145	0.144	0.143	0.139		
AD	0.040	0.060		0.052	0.054	0.044	0.047		
AE	0.188	0.193	DT8706	0.190	0.190	0.190	0.190		
AF	0.125	0.160		0.141	0.144	0.137	0.137		
AG	0.140	0.160		0.142	0.144	0.152	0.152		
AH	1.360	1.400		1.383	1.384	1.378	1.381		
AI	0.040	0.060		0.045	0.044	0.051	0.049		
AJ	1.190	1.230		1.224	1.224	1.225	1.224		
AK	0.010	0.020		0.015	0.015	0.015	0.015		
AL	0.053	0.073		0.063	0.063	0.063	0.063		
AM	0.240	0.260		0.250	0.250	0.250	0.250		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39	DT8699						
AP	0.257	0.262	DT8683	0.258	0.258	0.258	0.258		
AQ	0.053	0.073		0.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

Measured by: MS / J.G	Audited by: [Signature]
Date: 06/11/30 / 06/10/08	Date: 06/12/11

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	[Signature]

DART AEROSPACE LTD	Work Order: 29524
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

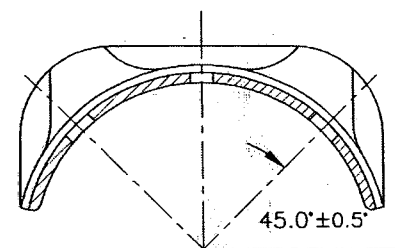
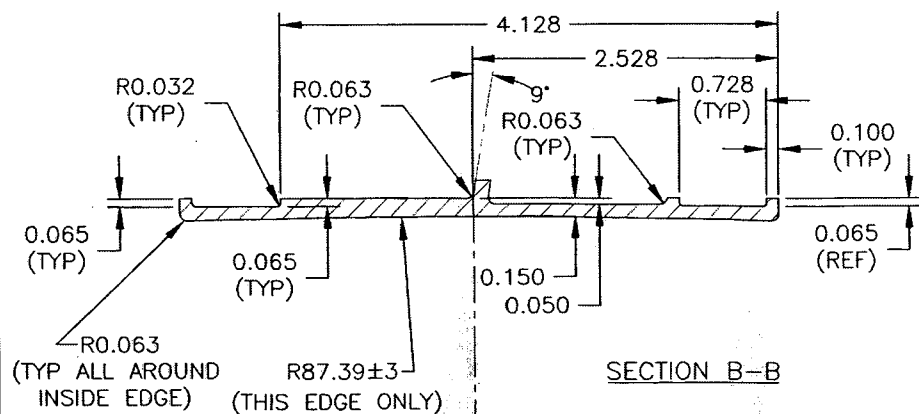
Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	17	18	19	20	By	Date
Lathe Section									
A	2.707	2.712		2.712	2.712	2.712	2.712	MS	06/11/30
B	4.946	4.966		4.956	4.956	4.956	4.956		
C	3.064	3.084		3.078	3.076	3.077	3.077		
D	0.718	0.738		.728	.728	.728	.728		
E	0.090	0.110		.102	.102	.102	.102		
F	2.934	2.954		2.945	2.944	2.944	2.944		
G	2.166	2.186		2.177	2.176	2.176	2.176		
H	3.890	3.910		3.900	3.900	3.900	3.900		
I	0.914	0.934		.924	.924	.924	.924		
J	0.022	0.042		.032	.032	.032	.032		
K	0.109	0.129		.117	.117	.117	.117		
L									
HAAS Section									
AA	2.985	3.005		2.996	2.995	2.995	2.998		
AB	0.440	0.460		0.450	0.456	0.450	0.450		
AC	0.125	0.160		0.138	0.148	0.147	0.143		
AD	0.040	0.060		0.054	0.049	0.049	0.048		
AE	0.188	0.193	DT8706	0.189	0.189	0.189	0.189		
AF	0.125	0.160		0.138	0.146	0.144	0.139		
AG	0.140	0.160		0.147	0.152	0.151	0.149		
AH	1.360	1.400		1.381	1.378	1.381	1.380		
AI	0.040	0.060		0.049	0.045	0.048	0.047		
AJ	1.190	1.230		1.224	1.218	1.221	1.215		
AK	0.010	0.020		0.015	0.015	0.015	0.015		
AL	0.053	0.073		0.063	0.063	0.063	0.063		
AM	0.240	0.260		0.250	0.250	0.250	0.250		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39	DT8899						
AP	0.257	0.262	DT8883	0.259	0.259	0.259	0.259		
AQ	0.053	0.073		0.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

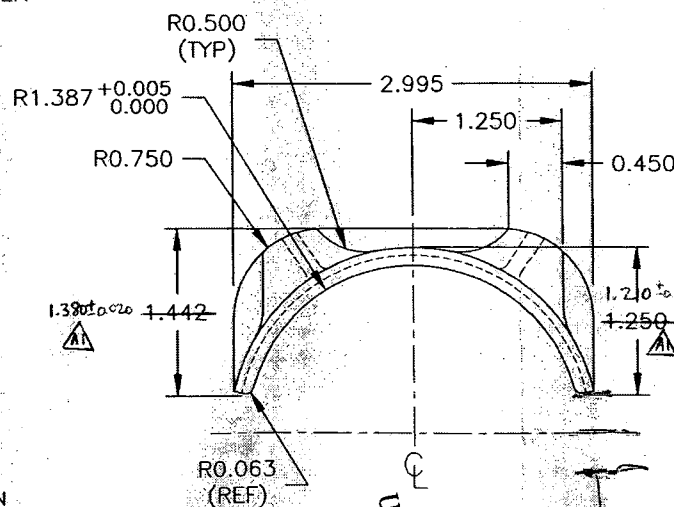
Measured by: MS/ Ep
Date: 06/11/30 06/12/10

Audited by: [Signature]
Date: 06/12/11

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	[Signature]



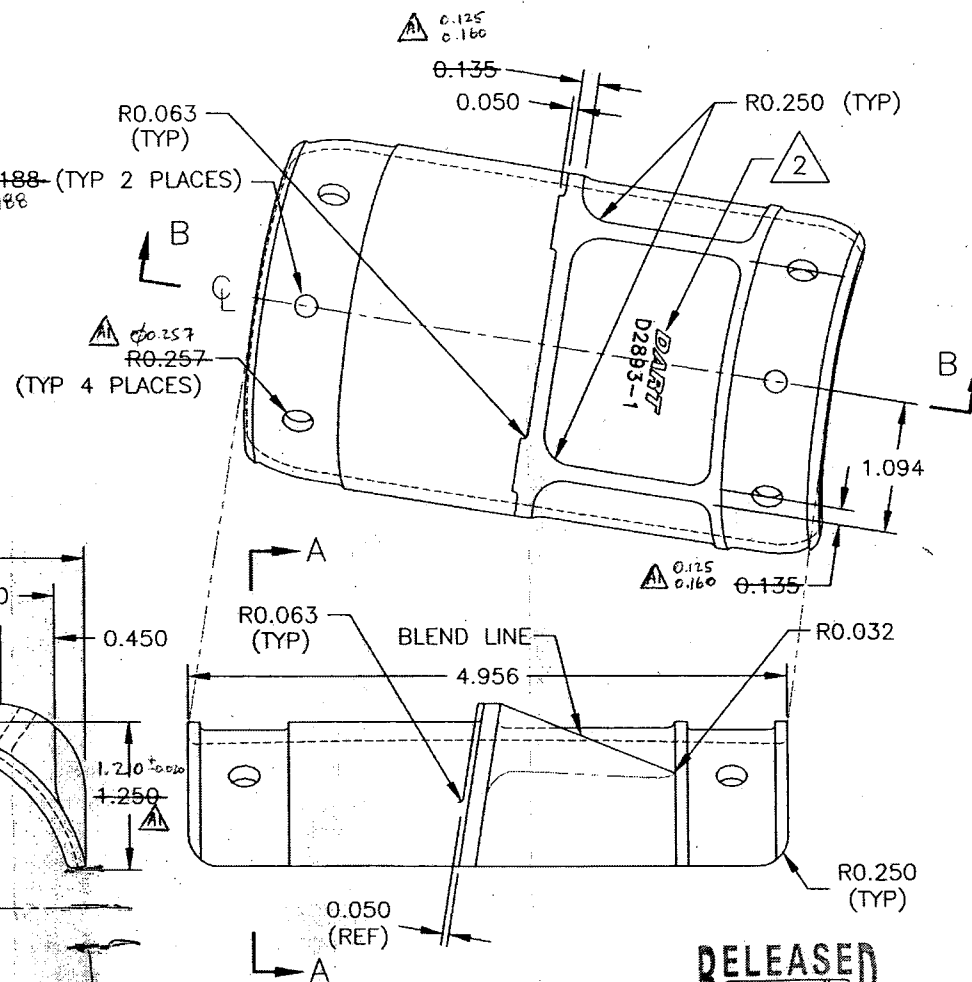
SECTION A-A
TOOLING HOLE DETAIL



D2893-1

- 1) MATERIAL: 17-4 PH STAINLESS STEEL
HEAT TREAT TO H900 CONDITION
(900°F FOR 1 HR, AIR COOL)
MIN UTS = 170 KSI (38 HRC)
- 2) IDENTIFY WITH DART LOGO AND PART NUMBER IN
THIS AREA WITH 0.125 HIGH LETTERING 0.010-0.020 DEEP
- 3) BREAK ALL UNMARKED SHARP EDGES 0.010 TO 0.020
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 6) ALL DIMENSIONS ARE IN INCHES
- 7) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3

NO. 29524
WORK ORDER
SUBJECT TO AMENDMENT
WITHOUT NOTICE
UNCONTROLLED COPY
ENGINEERING
RETURN TO
SHOP COPY



RELEASED
01.01.11

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THAT IT IS NOT TO BE USED FOR ANY PURPOSE
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DART AEROSPACE LTD.

AI	CP	02.01.23	UPDATE DIMS AS MANUFACTURED.
A		01.01.10	NEW ISSUE
DESIGN	CP	DRAWN BY	CP
CHECKED	RT	APPROVED	CP
DATE	01.01.10	TITLE	02.750 SUPPORT
		DRAWING NO.	D2893
		REV. A	SHEET 1 OF 1
		SCALE	1:1

DART AEROSPACE LTD.
HAMPSHIRE, ONTARIO, CANADA

11-10-'06 04:43 FROM-

Product Certification Report

Report Number: **4233910**



VALBRUNA

SLATER STAINLESS, INC.
2400 Taylor Street West, P.O. Box 630
Fort Wayne, Indiana USA 46801
Phone: 260-434-2892 Fax: 260-434-2806

Certified on Nov 07, 2006 Page 1 of 2

Order I.D. 0601219 001		Order Date 4/10/06		Commodity Code 14996	
Dim 1 4.0000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 242613	Customer I.D. 001123	Customer Purchase Order 01-16285
Product Shape Rounds			Product Surface Centerless Ground/Cold Finish		
Length (Inches) 132.000 Min. 156.000 Max.			Bill of Lading # 404301	Customer Grade 17-4	

Ship To
CASTLE METALS
3400 NORTH WOLF ROAD
FRANKLIN PARK, IL 60131

Sold To

VALBRUNA STAINLESS, INC.
2400 TAYLOR STREET WEST
FORT WAYNE, IN 46802

Lists: 0047

AISI 630

UNS S17400

AMS 2303E

CHEMICAL ANALYSIS

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.037	.52	.023	.020	.47	15.64	4.61	.15	3.35	.04	.37	.001	.37

HB

342

TENSILE PROPERTIES

CAPABILITY

HB	TS (PSI)	2KYS (PSI)	%EL(2")	%RA	AGE(F)
419	204000	190500	14.2	49.0	900

MAGNETIC PARTICLE TEST

FREQ SEV

AVG .00 .00

PRODUCTION HEAT TREATMENT

SOL-ANN(F)	SOL-ANN(HR)	QUENCH
1900	7.75	Air

MACRO ASTM E340/E381

MACRO

OK

OK

OK

PERCENT FERRITE

% FERRITE

AVG 1.0

Reduction ratio 5 To 1 Min.

Electric Furnace melted; AOD refined.

Ultrasonic test OK.

Chemical testing performed to one or several of the following ASTM methods: E415, E572, E1019, E1085, E106

No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

CASTLE METALS FP
DATE REC'D 11/19/06 IAC 14996
APPROVED BY: [Signature]

WV18:11 900Z '6 AON

**VALBRUNA****SLATER STAINLESS, INC.**2400 Taylor Street West, P.O. Box 830
Fort Wayne, Indiana USA 46801
Phone: 260-434-2882 Fax: 260-434-2885**Product Certification Report****Report Number: 4233910**

Certified on Nov 07, 2006 Page 2 of 2

Order I.D. 0601219 001		Order Date 4/10/06		Commodity Code 14996	
Dim 1 4.0000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 242613	Customer I.D. 001123	Customer Purchase Order 01-16288
Product Shape Rounds			Product Surface Centerless Ground/Cold Finish		Customer Grade 17-4
Length (Inches) 132.000 Min. 156.000 Max.			Bill of Lading # 404301	Weight	

**Ship
To****CASTLE METALS
3400 NORTH WOLF ROAD
FRANKLIN PARK, IL 60131****Sold
To****VALBRUNA STAINLESS, INC.
2400 TAYLOR STREET WEST
FORT WAYNE, IN 46802**Quality system is compliant with ISO 9001:2000. Produced in accordance with EN 10204 3.1B.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

91 d 1838 ON Dennis Hackett

NOV 9 2006 11:31AM

**VALBRUNA**

SLATER STAINLESS, INC.
 2400 Taylor Street West, P.O. Box 630
 Fort Wayne, Indiana USA 46801
 Phone: 260-434-2892 Fax: 260-434-2905

Product Certification Report**Report Number: 4213510**

Certified on Aug 29, 2006 Page 1 of 2

Order I.D. 0600410 001	Order Date 2/14/06	Commodity Code 14996
Dim 1 4.0000	Dim 2 .0000	Dim 3 .0000
Heat I.D. 042620	Customer I.D. 001123	Customer Purchase Order 01-12439
Product Shape Rounds		Product Surface Centerless Ground/Cold Finish
Length (Inches) 132.000 Min. 156.000 Max.		Customer Grade 17-4
Bill of Lading # 403806		Weight

**Ship
To**

CASTLE METALS
3400 NORTH WOLF ROAD
FRANKLIN PARK, IL 60131

**Sold
To**

VALBRUNA STAINLESS, INC.
2400 TAYLOR STREET WEST
FORT WAYNE, IN 46802

Lifts: 0025 0030

AISI 630
UNS S17400
AMS 2303E

CONDITION A
ASTMA 564-04
AMS 5643Q

3174-03 Rev 18 DTD 07/15/05
ASMESA 564 01 ED 2002 ADD

CHEMICAL ANALYSIS

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.040	.55	.022	.026	.38	15.80	4.33	.21	3.33	.04	.28	.010	.29
HB												
361												

**TENSILE PROPERTIES
CAPABILITY**

HB	TS (PSI)	.2%YS (PSI)	%EL(2")	%RA	AGE(F)
430	205000	193300	12.9	54.6	900

MAGNETIC PARTICLE TEST

FREQ SEV
AVG .20 .13

PRODUCTION HEAT TREATMENT

SOL-ANN(F) SOL-ANN(HR) QUENCH
1900 °7.75 Air

MACRO ASTM E340/E381

MACRO
OK
OK
OK

PERCENT FERRITE**% FERRITE****AVG .5****Reduction ratio 5 To 1 Min.****Electric Furnace melted; AOD refined.****Ultrasonic test OK.**

We certify that the contents of this report are correct and that all operations performed by our company or subcontractors are in compliance with material specifications and the ASME Boiler & Pressure Code. Section III, Section III, Subsection NCA-3800, 2001 edition. 02 Addenda

Chemical testing performed to one or several of the following ASTM methods: E415, E572, E1019, E1085, E1086

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Manager Laboratory Services

Dennis Hackett
Dennis Hackett

CASTLE METALS FP

DATE RECEIVED **8-29** IAC **14996**
 APPROVED BY *JF*

**VALBRUNA****SLATER STAINLESS, INC.**2400 Taylor Street West, P.O. Box 630
Fort Wayne, Indiana USA 46801
Phone: 260-434-2892 Fax: 260-434-2905**Product Certification Report****Report Number: 4213510****Certified on Aug 29, 2006 Page 2 of 2**

Order I.D. 0600410 001		Order Date 2/14/06		Commodity Code 14996	
Dim 1 4.0000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 042620	Customer I.D. 001123	Customer Purchase Order 01-12439
Product Shape Rounds			Product Surface Centerless Ground/Cold Finish		Customer Grade 17-4
Length (Inches) 132.000 Min. 156.000 Max.			Bill of Lading # 403806	Weight	

**Ship
To****CASTLE METALS
3400 NORTH WOLF ROAD
FRANKLIN PARK, IL 60131****Sold
To****VALBRUNA STAINLESS, INC.
2400 TAYLOR STREET WEST
FORT WAYNE, IN 46802**

No mercury or low melting alloy contamination. No weld repair.
Material melted and manufactured in the United States.
Material conforms to listed specifications.

Quality system is compliant with ISO 9001:2000. Produced in accordance with EN 10204 3.1B.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hacker

